Division Prior Assessment Question 10:
Objective: I can identify prime numbers.

NC NASDM5: identify common factors, common multiples and prime numbers

Teacher Input Ideas: Place the numbers 2, 3, 13, 5, 7, 11, 12, 9, 24 and 15 on to the board. Ask the children to pick a number from the list and make rectangles or arrays out of these numbers. Alternatively, you could link this with factor and multiple knowledge and the children could list all the factors of these numbers. Demonstrate that a rectangle, square or an array can be made with these factors. Discuss what the children have noticed about the factors of these numbers. Discuss how some have more options than others. Establish that some numbers only have factors that are 1 and itself. Discuss that these are called prime numbers.

Place a variety of numbers around the room pinned up for the children to explore and walk around. Children to collect on whiteboards prime numbers and not prime (we call these composite numbers) from the ones displayed. Examples of numbers: 64, 42, 21, 17, 19, 18, 29, 30, 6, 5.

Encourage the children to understand that any number ending in an even digit is not a prime number. Model and explain why. Also discuss how 2 is a prime number as it is only divisible by 1 and itself. You may want to model ways of working systematically to check if a number is a prime number or a composite number. Such as, list factors starting from 1, then 2, then 3 etc. The children should be able to suggest that if the number has a factor of 2 then it can be ruled out straight away. If not they should then look if it has a factor of 3 etc.

Practice Activities

Purple Practice: Most suited for children who made errors in Q10 and demonstrate little understanding of prime numbers.

The children are presented with numbers from 1 to 70. Encourage the children to work along each number and to find if each number has any factors apart from one or itself. The children then to cross out these numbers to help them see which ones are left and are prime numbers. If the children are finding it hard to identify this, cubes or squared paper may help. Ask the children to make a square or a rectangle. If they can only make it one way, such as 1 row of 11 cubes, then it is a prime number, however with numbers such as 12, they should recognise that they can make it with 3 rows of 4, 2 rows of 6. Alternatively, they could have objects and to see how many ways they can group the objects.

Green Practice: Most suited for children who made errors in Q10 and need to secure picking out prime numbers from a list of numbers.

The children are given short sequences of numbers. The children are to work along the blocks picking out which ones are prime numbers. Encourage the children to work systemically in factor pairs for numbers to help them decide if it is a prime number. For example, start with 2. If it is an even number it has a factor of 2. Then children could see if the number has a factor of 3, etc. The children may need to make jottings to help them to decide.

Yellow Practice: Most suited for children who answered question 10 accurately in the prior assessment and would benefit from applying these skills to an investigation.

Children are to investigate which is the most common ending digit for prime numbers between 1 and 100. Encourage the children to suggest where they could start this investigation (such as first listing and finding all the prime numbers to 100). How are they going to find out the answer? Can they suggest ways to collect the information? Can they record their information in a way to share with others? Encourage the children to explain to others what they have found out and how they can prove this.

This activity has the opportunity for children to apply statistic skills such as collecting data, using tables and presenting data in a graph, pictogram or chart. If the children have learnt about pie charts, they could present their data in a pie chart or simple templates could be created to help them or the use of computer programs to collect and present data would further support children.

Mastery This mastery activity encourages the children to combine their understanding of multiples and prime numbers. The children are asked to find all three possible combinations for the first question.

If the children are having difficulty prompt them with key questions:

What do know about multiples? What are the multiples of 6 below 23? What do you know about prime numbers? What the prime numbers below 23? Which ones could be added together to make 23?

For the second question, there is only one possible answer. Encourage the children to think about sensible starting points. What do they know about multiples of 3? How are you going to start to investigate? What prime numbers do you know? Some children may start at 3 and list all the multiples. They then may see how many more they need to make 30 and explore which numbers are prime numbers. Some children may start at 30 and work backwards.

Answers:

Purple:

Prime numbers from 0- 70

2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67

Green:

1) 1,2,3,5,7,
2) 17,19
3) 29,31
4) 41,43,
5) 53
6) 61,
7) 79
8) 89

Challenge:
97
997

Yellow:

This list of prime numbers may help the children to work out if they were right:

2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,

1 there are 5

2 there is 1

3 there are 7

5 there is 1

7 there are 6

9 there are 4

mastery

1) 6 + 17
   12 + 11
   18 + 5
2) 27 + 3

BRICKWORK
Mathematics

Purple Practice

Lo: I can find prime numbers.

Look at the numbers below. Explore which numbers only have the factors of 1 and itself. These are called prime numbers.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

List all the prime numbers you have found here:

BRICKWORK Mathematics

Green Practice

Lo: I can identify prime numbers from a set of numbers

Look at each set of numbers. Find the prime numbers in each set and write them in the pink box.

1) 1 2 3 4 5 6 7

2) 15 16 17 18 19 20 21

3) 27 28 29 30 31 32 33

4) 40 41 42 43 44 45 46

5) 49 50 51 52 53 54 55

6) 60 61 62 63 64 65 66

7) 75 76 77 78 79 80 81

8) 87 88 89 90 91 92 93

Challenge:
What is the largest prime number under 100?
What is the largest prime number under 1000?

BRICKWORK Mathematics

Yellow Practice

Lo: I can use my knowledge of prime numbers to investigate a question.

Which digit do you think most prime numbers end in?

Investigate the most popular digit in the ones place for prime numbers between 1 and 100.

Thinking points:

- How are you going to find the answer to this question? Where will you start?
- What do you know about prime numbers and multiples? How will this information help you?
- How are you going to collect this data?
- What is the best way to present this data?

BRICKWORK Mathematics

Mastery

Problem solving

1) A **multiple of 6** and a **prime number** have been added together to give the total of **23**.

Find the 3 possible answers:

2) A **multiple of 3** and a **prime number** have been added together to give the total of **30**.

Find the answer: